Town of Lauderdale-By-The-Sea

OFFICE OF THE TOWN MANAGER

Memorandum

Date: July 28, 2010

To: Mayor Roseann Minnet
Commissioner Stuart Dodd
Commissioner Birute Clottey
Commissioner Scot Sasser
Commissioner Chris Vincent

From: Connie Hoffmann, Interim Town Manager

Cc: Susan L. Trevarthen, Town Attorney

Subject: Reef Restoration Project Questions

COMMISSIONER SASSER'S QUESTIONS
At the last Commission Roundtable, Commissioner Sasser asked a number of questions regarding this project that the Commission directed we bring back with answers. After the meeting, Commissioner Sasser provided the Town Attorney and me with the list of questions contained in this memo. Most of the answers are provided in this memo and the individual who provided the answer is noted.

Please note that text in any comments provided from Dr. Goreau is a quotation or summary of information received from him. The Town has not had time to verify all of these statements, and is not necessarily in agreement with them.

Are three solar buoys still necessary?

Dr. Goreau was invited to attend today's scheduled workshop on the project (at his own cost) and plans to attend. In correspondence with him last week, he indicated the one solar buoy that has been constructed can provide double the power of the buoy originally designed, so I asked him whether that negated the need for the third buoy. See our interchange below:

> (Hoffmann question) **If, because of the redesign, the single buoy will provide as much power as the two original buoys proposed, do you have to have two buoys installed to make the project work?**

Dr. Goreau response: "No, we do not need to place 2 buoys to power the project. The original buoy design was 90 watts per buoy. The buoy that has been built is 180 watts. This gives us the 30 watts per reef module that the project was designed for, now using one buoy instead of two. When we were planning on the 90 watt per buoy design we were going to put reef modules in clusters of 3 to build a structure near each buoy. Now that the buoy is producing twice the wattage we would like to move all the reef modules to one location so they can be powered by a single buoy. The solar power buoys still don't produce quite as much power as we would prefer, because the rate of growth increases with the power put into it, so this is not as good as having two 180 watt buoys, but it will work fine. The permits for the project only allow us to use charged structures, because these won't rust. An uncharged structure would eventually rust and eventually have to be removed before it collapsed."

You will see in the answers Dr. Goreau provided to some of Commissioner Sasser's questions below, he assumed that he would only now have to build two solar buoys. However, most of the permits issued for the project call for two buoys. It is unknown how long it will take or how complicated it will be to get the permits amended. Dr. Goreau may be able to provide input on this.

1. **Is the town in receipt of Exhibit B or C signed and executed for Stage I or II being completed?**

   Interim Town Manager response: Dr. Goreau provided a signed statement dated August 25, 2009 "that all First Stage Work (as such term is defined in the Construction Contract between the undersigned and the Town of Lauderdale by the Sea) has been completed" and stated that there were no liens or encumbrances from himself or subcontractors.

2. **What are the details of why the decision was made to switch from pier power source to solar buoys?**

   Dr. Goreau response: "We had been told that the owner of the fishing pier agreed to let us power it from the dock, but the electrical system was destroyed by the hurricane. Because of the cost of replacing power lines on the pier, we decided in consultation with LBTS to move to a solar power buoy option instead. This would eliminate the cost to the Town of electrical repairs on the pier to provide electrical service for the project.

   This artificial reef project is being created for habitat enhancement and to expand the Lauderdale-By-The-Sea snorkeling trail. The artificial reef would have had to be closer to the pier using the power from the pier option. By moving the project further from the pier it removes user conflicts and safety issues between fishermen and divers."

   What are detailed costs of each option (pier vs. solar buoys)?

   Dr. Goreau response: **"**Although the pier was our first choice because of the power, when that option was closed we realized that the solar power buoy could

actually be cheaper in the long run because there are no external costs that would be required to power from the pier. The difference in the contract cost for the two solar buoys and the pier option was $11,200. Before the revised contract was signed the Town requested a third buoy for a back-up power supply. This is now a difference of $16,200 between the solar buoys and the pier option. The cost of the buoys was $ 15,000 plus $ 7,000 for drilling anchors and moorings. The solar option would eliminate the need for transformers, inverter, control box on pier and additional cable (contract power supply item). The town had agreed to provide a dedicated service for our equipment to hook-up to at the end of the pier. This would have caused an additional cost to the town outside of our contract and we do not know the amount of the cost of the wiring and installation and the additional cost of electric bills.

Amounts in dollars

Item	**Pier Option**	**Solar power**
Cable	2,000	200
Power supply	4,000	15,000
Moorings	0	7,000
Electric bill	?	0
Wiring the pier	?	0
Service box and meter	?	0”

3. Who will be responsible for oversight of this project?

Dr. Goreau response: “I will personally be in charge of our very competent local dive team, as I have done hundreds of such projects all around the world. Our local team have not built Biorock reefs before (this will be the first for corals in the US, although we have several oyster projects), but they are highly experienced underwater workers, who will quickly learn the details.”

Interim Town Manager response: Dr. Goreau’s contract references that he will provide maintenance and monitoring. We need more information about what exactly is involved for each of the parties in the maintenance, monitoring and oversight of this project.

The Assistant Town Manager will have responsibility for oversight of the project from the Town’s perspective going forward. However, given the monitoring and maintenance responsibilities laid out in the various permits (described towards the end of this memo), it appears that the Town may have to hire a marine engineering firm or marine sciences firm to do the technical monitoring and inspections after the first year of installation. If problems are identified during

those monitoring dives, a contractor may have to be hired to do any maintenance required; the contract is unclear whether that is Dr. Goreau's responsibility.

4. **We need line item details of the increase request.**

   Dr. Goreau response: "I'll need to discuss this in more detail with Bob Parkinson and Dan Clark. But my current understanding is that if we can move forward the $5,000 allocated for the back-up buoy after the end of the project, and apply this to the second buoy now, that we would need an additional $4,718 to compete the second buoy based on Bob Parkinson's current cost. We went out looking for private donations and have raised $ 682.00. If you add that to the $3,500 we have left in our budget (from the 3rd draw) that leaves the balance to $ 4,718 needed to pay the $ 8,900 cost of the backup buoy."

5. **Are there any patents associated with this project?**

   Dr. Goreau's response: "The patent on Biorock Technology is held by the heirs of the late Professor Wolf Hilbertz and myself. It represents some 50 man-years of research and development."

   Town Attorney response: We do not know the answer to this question, but it is likely that there are patent issues related to this project, particularly in light of the budget exhibit which has a line item of $3,000 for patent fees. We do not know if we need any further agreement from other patent holders, and we do not know if other patents are involved. Also, the contract is unclear as to ownership of any additional patents that may be developed pursuant to this project.

6. **Have references been contacted? Per the backup material this has been implemented in other places. Have we checked to see if the solution is exactly the same? What were the results of prior implementations?**

   Interim Town Manager response: According to Dr. Goreau, the Lauderdale-By-The-Sea project will be the first application of this technology in the United States. There is nothing in the Town files regarding applications elsewhere other than a few newspaper articles that reference projects in Mexico, Turk Island and southeast Asia. We have not found notes or documents in the Town files on the project that would indicate references were contacted on prior or existing applications.

7. **Who is responsible for maintenance of the system?**

   Dr. Goreau response: "Dan Clark will be in charge of maintenance, and I will come down if there is need for major repairs."

   Town Attorney response: The contract is not completely clear on this point; however, the line items for monitoring and maintenance indicate to us that the vendor has some level of responsibility for maintenance, which needs to be further defined. The contract also provides that savings in some line items can be reallocated to other line items, except that the monitoring and maintenance

line item "shall not be reduced or reallocated." Additional detail needs to be provided on this issue.

What are the details of the responsibilities and what are the costs associated?

Interim Town Manager response: The Town has responsibility under the permits for maintenance of the installation; however, Exhibit A of the contract provides for payment to GCRA (in advance!) for monitoring and maintenance in the first year after installation. Two line items in Exhibit A are applicable to this issue. One item is $10,000 for "maintenance, operations, repair"; the other is $12,000 for "monthly inspection, monitoring for a year". More detail is needed on what this involves.

8. **There have, clearly, been breaches in the timelines associated with this project. What are the remedies? What is our recourse?**

Town Attorney's response: Paragraph 12 of the contract provides that time is of the essence. Paragraph 2 provides the first stage is to be performed within 60 calendar days of execution. The second stage is to be performed within 60 calendar days after issuance of the permit by FDEP. [Note: the first amendment indicates that Paragraph 2 is deleted, but apparently it is Paragraph 3 that is deleted and revised based on the text involved and what it says.] The remedies involve a breach of contract action and suit for damages. The damages would likely involve amounts paid to the vendor plus interest, and maybe some amount for lost tourism dollars and any other actual damages that the Town could show. The Town could also seek mandamus or specific performance. While this is a unique service, it may be that the Court would not force the vendor to perform.

9. **What do we presently own? What will we own at completion?**

Town Attorney response: We have a lien or may own outright the structure that the vendor has created and/or the documents, schematics and plans created by the vendor. The right to patents is currently unclear. After completion, we own the structure that is created. The contract is silent on ownership of the other elements, such as working documents and any additional patents.

10. **What contractual guarantees and/or warrantees do we have?**

Town Attorney response: The contract is silent on this. We have implied contract warranties and warranty of fitness for a particular purpose. This means that the Town is entitled to expect the structure will perform as advertised, and that its expenditures will yield a benefit.

11. **Do we currently have rights to the schematics and plans needed to complete the work on our own or have the work completed by another party should we decide to provide notification of breach?**

Town Attorney response: No. There are no contract provisions on this subject. Even with regard to whatever schematics, documents or drawings are in the Town's possession, we do not have knowledge of what conflicting intellectual property rights exist.

12. What are our measurements to monitor success or failure?

Interim Town Manager response: There are no such measurements provided in the contract; however, the Army Corps of Engineers' permit requires that differences in coral growth, coral survival and fish populations at the artificial reef site, as compared to four control areas, be documented during monitoring dives. None of the permits define, however, a performance measure of success.

13. What independent party will measure success of the project and science?

Interim Town Manager response: See answer to #12. The Town may wish to hire a marine engineer or scientist to do the required monitoring of the project.

14. Who is responsible for completing the 3 buoys?

Town Attorney response: It is Global Coral Reef Alliance's responsibility to generally erect and operate a reef habitat; the buoys are not specifically mentioned other than on the list of elements in Exhibit A to the amendment. However, since the buoys are an element of the whole reef habitat, it is reasonable to infer that the vendor must complete them in order to complete the services required under the contract.

15. Has the proper due diligence been completed on GCRA for liability of project incompletion, failure or liability after completion?

16. Options: Notify GCRA of breach and option to re-negotiate or turnover all documents, schematics, permits, etc. to complete project. Or, refund all funds paid to date. Or, cut our losses and undertake a more viable solution.

Town Attorney response: Before risking more funds, the Town may want to consider requiring the vendor to provide proof of his financial viability and an indication of what he has spent the money on already. It may also be prudent to seek substantial changes in the contract as a condition of continuing with the project. If GCRA does turn over anything, the Town should seek the rights to the intellectual property, as well as the structure, and the plans and other materials.

PERMITTING INFORMATION

Although the Commission did not ask for this information, I quickly reviewed the permits to see what obligations they place on the Town.

The **Broward County Aquatic & Wetland Resources License** issued on 11/20/2009 to Lauderdale-By-The-Sea only refers to two solar buoys moored to the ocean floor in the description of work. Among the requirements they imposed are:

1. Notify the County at least 48 hours in advance of commencement of the project and 48 hours after project completion.
2. No impacts to existing natural resources (including corals, sponges, algae and fish) are permitted. If there is impact, the County will take enforcement action and may impose penalties on the Town and/or require mitigation.
3. If the artificial reef structure destabilizes, it requires re-securing materials, and it requires a site inspection (with notification to the County) to assess stabilization after "major storm" events.
4. Monitoring shall be conducted for 5 years by the Town. In the first year, monitoring must be done monthly. In the second and third years, monitoring is to be done quarterly. In the fourth and fifth years, monitoring shall be done annually. A monitoring report must be sent to the County for each site inspection.
5. The "structural integrity and stability of the structures" shall be maintained by the Town "in perpetuity".
6. As-built drawings must be submitted to the County within 30 days after installation. Failure to install the structures "as authorized" will result in enforcement action.
7. Various conditions relating to protection of manatees during installation are imposed.

I also just located a receipt that indicates that the Town paid Broward County a $2,400 application fee in June of 2009 for the license, $1,600 of which was apparently a monitoring fee.

The **Florida Department of Environmental Protection** General Permit issued 12/12/2008, like the County permit, refers to two solar buoys to be installed in the description of the project. The Town paid $250 for the Florida DEP permit application fee. The state permit imposes the following conditions, among others:

1. Specifies that artificial reef materials must be free of a number of defined pollutants, including oil and grease.
2. The prohibition of impacts to existing natural resources goes far beyond that imposed in the County license. It includes "submerged aquatic vegetation, shellfish, hard bottom, hard corals and soft corals."
3. The site shall be marked by perimeter buoys during construction.
4. Structures must be maintained in functional condition, and repaired or removed if they become dilapidated.
5. Construction must be complete within 5 years of the permit issue date.

The **Army Corps of Engineers** permit imposes conditions similar to those of the other permits, but adds:

1. Includes a reference to "a total of eight buoys."
2. Requires that the work be completed by June 10, 2014.
3. The protection of existing natural resources clause is the most extensive of all the permits and includes a requirement to maintain a deployment buffer of at least 200 feet from "any submerged beds of sea grasses, coral reefs, live bottoms…"

etc. This provision appears to conflict with actual ground conditions. (See email to Dr. Goreau, and Goreau's response is attached.) We should clarify with Dr. Goreau how this matter was resolved with the Army Corps.

4. Requires 14-day notification to the Army Corps prior to installation and the Corps will inspect the material to be installed.
5. Requires a post-deployment report within 30 days of the installation and that installation of materials be accurate within 5 meters. Depths shall be accurate within 1 meter.
6. By signing the permit, the Town certified that we own all artificial reef materials deployed, and accepted liability for them.
7. Requires a similar monitoring schedule as the County permit, but specifies the first report to be submitted 30 days after installation. The Army Corps provides more specific direction on what information is to be included in the monitoring reports, and that high resolution digital video documentation of the inspection must be made. Fish counts are to be conducted on each monitoring inspection.
8. Four control sites must be established, and documentation of what happens on the control site is required with each monitoring inspection.
9. Analysis must be made of "recruitment, growth, and survival rates of sessile populations and of fish" on the artificial reef compared to the control sites.
10. On each structure, "All visible hard and soft corals will be photographed with a scale, so that" growth and survival rates can be computed.

ONGOING COSTS

I have not found any estimate of the Town's ongoing costs to monitor and maintain the reef structure and buoys in the files on this project. The Town Engineer may be able to develop estimates of those costs, or Dr. Goreau may be able to provide them.